

## Claims

1. A film production process comprising the following steps (1) and (2):

5 Step (1):

a step of coating a polymer having a double bond within the molecule on a support, and

Step (2):

10 a step of placing the support coated with the polymer in a solvent incapable of dissolving the polymer coated, to cause a crosslinking reaction of the double bond within the molecule and thereby form a film.

2. The film production process as claimed in Claim 1,  
15 wherein an  $\alpha,\beta$ -unsaturated dibasic acid derivative is present in the solvent used in the step (2).

3. The film production process as claimed in Claim 2,  
wherein in the step (2), the polymer having a double bond  
20 within the molecule reacts with the  $\alpha,\beta$ -unsaturated dibasic acid derivative.

4. The film production process as claimed in Claim 1,  
wherein the polymer having a double bond within the  
25 molecule is an unsaturated carboxylic acid-diene monomer copolymer and/or an unsaturated carboxylic anhydride-diene monomer copolymer.

5. The film production process as claimed in Claim 1, wherein the polymer having a double bond within the molecule is a poly(butadiene-maleic acid) and/or a poly(butadiene-maleic anhydride).

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6. The film production process as claimed in Claim 2 or 3, wherein the polymer having a double bond within the molecule is one or more member selected from an unsaturated carboxylic acid-diene monomer copolymer, an  
10 unsaturated carboxylic anhydride-diene monomer copolymer, a butadiene copolymer and a polybutadiene.

7. The film production process as claimed in Claim 2 or 3, wherein the polymer having a double bond within the  
15 molecule is one or more member selected from a poly-(butadiene-maleic acid), a poly(butadiene-maleic anhydride) and a polybutadiene.

8. The film production process as claimed in any one of  
20 Claims 2, 3, 6 and 7, wherein the  $\alpha,\beta$ -unsaturated dibasic acid derivative is a maleic anhydride and/or maleimide.

9. The film production process as claimed in Claim 8, wherein the  $\alpha,\beta$ -unsaturated dibasic acid derivative is a  
25 maleic anhydride.

10. The film production process as claimed in any one of Claims 1 to 9, wherein the support is a spherical porous

particle having a particle size of 1 to 30  $\mu\text{m}$ .

11. The film production process as claimed in Claim 10,  
wherein the spherical porous particle is a silica gel or a  
5 polyvinyl ether gel.

12. The film production process as claimed in Claims 1  
to 11, wherein the film is a weakly acidic cation  
exchanger.

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13. A film produced by the production process in any one  
of Claims 1 to 12.

14. A weakly acidic cation exchanger produced by the  
15 production process in any one of Claims 1 to 12.

15. A column for cation chromatography, using the weakly  
acidic cation exchanger of Claim 14.